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NOTES ON GEOGRAPHIC DISTRIBUTION

Trematoda, Digenea, Didymozoidae, *Coeliotrema thynni* Yamaguti, 1938: First record in Brazil with three new hosts records

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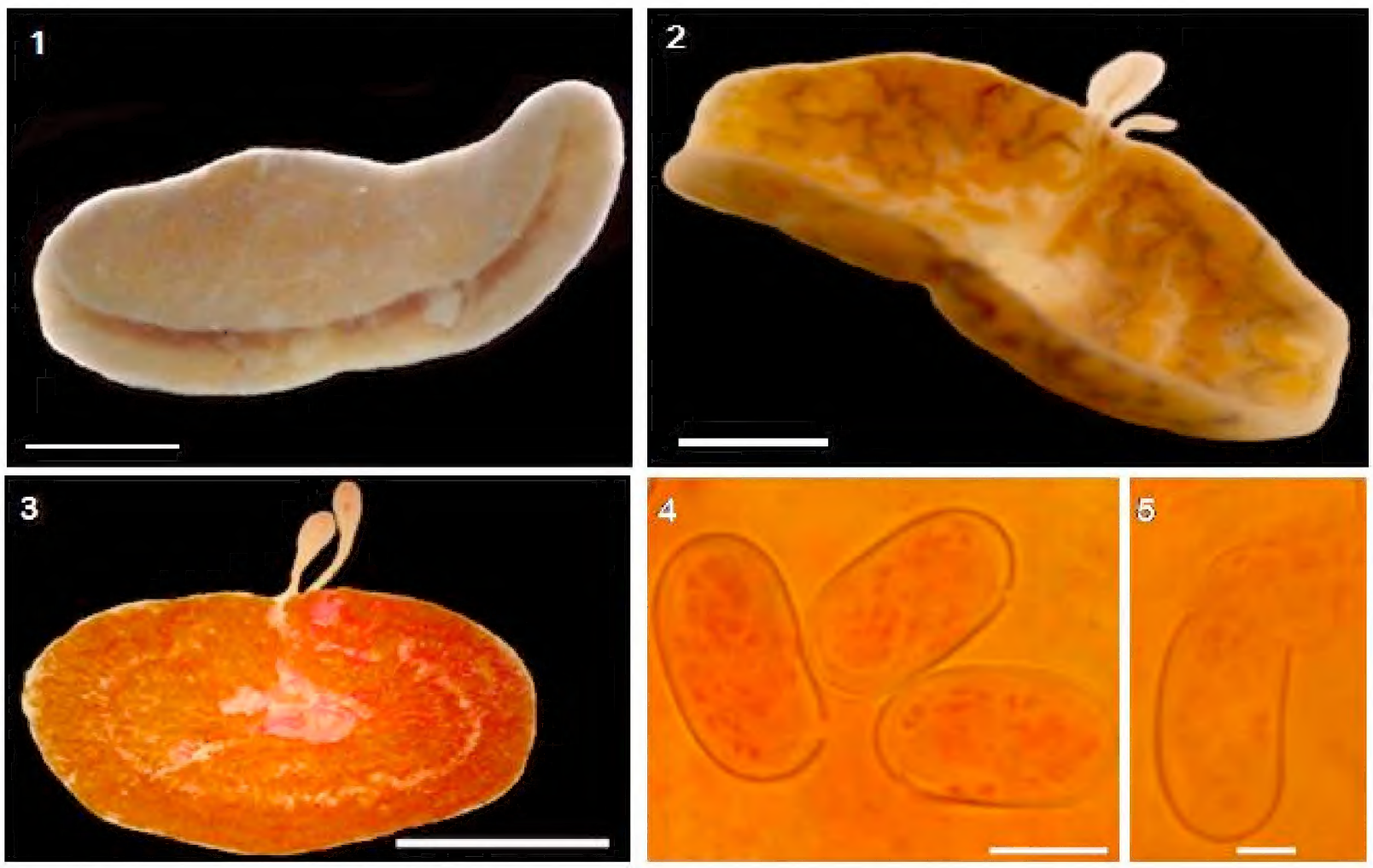
The didymozoid *Coeliotrema thynni* Yamaguti, 1938 originally described from *Thunnus thynnus* (Linnaeus, 1758) in the Pacific Ocean, was found parasitizing *T. albacares* (Bonnaterre, 1788) and three new hosts: *T. atlanticus* (Lesson, 1831), *T. obesus* (Lowe, 1839) and *Euthynnus alletteratus* (Rafinesque, 1810) (Scombridae, Perciformes), from Rio de Janeiro coast, Atlantic Ocean.

Thirty-eight *T. albacares* (34 - 76 cm total body length; 0.550 - 7.8 kg), 45 *T. atlanticus* (45 - 82 cm total body length; 1.3 - 6.0 kg), 35 *T. obesus* (42 - 80 cm total body length; 1.2 - 8.0 kg) and 31 *E. alletteratus* (31 - 80 cm total body length; 0.525 - 4.0 kg) were examined from January 2004 to April 2007. The fishes were obtained from local fishermen from the coastal zone of the state of Rio de Janeiro, Cabo Frio, Brazil (22°52'46" S, 42°01'07" W) and carried in large containers to the laboratory of the "*Instituto de Estudos do Mar Almirante Paulo Moreira*–IEAPM, Arraial do Cabo, Rio de Janeiro'. The fishes were identified according to Collette and Nauen (1983). The parasites were released from dissected cysts and fixed with or without compression in AFA (alcohol 93%, formalin 5%, acetic acid 2%), stained in alcoholic-acid carmine, dehydrated in alcohol series, cleared in methyl salicilate and mounted in Canada balsam. Measurements are in micrometers, with the mean in parentheses followed by the number of specimens measured in brackets (Table 1).



Figures 1 – 5. Photomicrographies of *Coeliotrema thynni* Yamaguti, 1938. (1) Female folded upon itself in the median line. Bar = 1 mm. (2) Female and male, ventral view. Bar = 1 mm. (3) Female and male, dorsal view. Bar = 2 mm. (4) Eggs. Bar = 10 Ām. (5) Miracidium releasing egg (*). Bar = 5Ām.

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Photographs were taken with a digital camera connected to a Nikon Eclipse E 800 microscope. The studied specimens are deposited in the Helminthological Collection of *Instituto Oswaldo Cruz* (CHIOC), Rio de Janeiro, Brazil: (37096 - 37098, 37099 a-b, 37100 a-c, 37101, 37206 - 37222, 37223 a-b).

Coeliotrema thynni (Figures 1 - 5) were found encysted in pairs (a male and a female) on the pyloric caeca of the hosts. Two hundred and nineteen specimens were found in eight out of 38 *T. albacares* examined (prevalence: 21%), 206 specimens in 17 out of 45 *T. atlanticus* (prevalence: 38%), 68 specimens in five out of 35 *T. obesus* (prevalence: 14%) and 189 specimens in nine out of 31 *E. alletteratus* (prevalence: 29%) examined.

Since the morphology of *C. thynni* has been well described by Yamaguti (1938), only a brief description and main measurements (Table 1) are presented based on 28 females and 28 males from four different hosts. The parasites present sexual dimorphism strongly expressed with male smaller than the female. The main feature of this species is given by the peculiar appearance of the female's posterior body's region, being folded upon itself in the median line enclosing the male at its center (Figure 1).

Male: Body consisting of a long scoop-shaped anterior region, attached to near the anterior end of the posterior region, widest at level of oesophagus, filiform elsewhere. Posterior region widened, hemispherical, enclosed in ventral cavity of female. Oral sucker directly followed by elongate muscular pharynx; oesophagus short, bifurcates into two caeca ending in posterior region of body's extremity. Testis single, tubular, spirally twisted, extends along the convex dorsal side of the posterior region of body; vas deferens arising from the anterior end of the testis and spirally twisted in body's anterior region. Genital pore ventral to oral sucker. Rudimentary female genital system present.

Female: Anterior region of body scoop-shaped; posterior region flattened, symmetrical folded upon itself in the median line and enclosing the male in a ventral cavity at its center (Figures 2 and 3). Oral sucker followed by muscular pharynx; oesophagus short bifurcated into caeca extending to near the extremity of body's posterior region. Genital junction at anterior margin of body's posterior region. Ovary long, ramified, located near Mehlis's gland, close to centre of posterior region with three terminal branches. Seminal receptacle near anterior margin of the body's posterior region. Vitelline gland tubular divided into branches extending throughout the posterior region. Uterine coils occupying most of available space of posterior region. Eggs bean-shaped, operculated (Figures 4 and 5).

Coeliotrema thynni was originally described by Yamaguti (1938) from mesentery of *Thunnus thynnus* from Japan, Pacific Ocean. It was reported by Pozdnyakov (1990) from intestinal wall of *T. albacares* and by Momoyama and Kobayashi (2004) from pyloric caeca of *T. thynnus* also from Pacific Ocean. In the present study *C. thynni* is reported in pyloric caeca of *T. albacares* and in three new hosts: *T. atlanticus, T. obesus* and *E. alletteratus*, from Rio de Janeiro coast, Brazil, representing the first record of this species in South America, Atlantic Ocean.

The morphology of *C. thynni* from the four different hosts examined is similar with the previous descriptions (Yamaguti 1938; Pozdnyakov 1996; Momoyama and Kobayashi 2004). Considering male and female body, the size of our specimens collected from *E. alletteratus* is smaller in both sexes. Our specimens from *T. albacares* from Atlantic Ocean are larger than those studied by Pozdnyakov from same host from the Pacific Ocean. Measurements of *C. thynni* from *T. albacares, T. atlanticus* and *T. obesus* agree with Yamaguti's original description.

The report of *C. thynni* for the first time in South America and in the Atlantic Ocean parasitizing four different hosts, from which three are new host records, increase the knowledge and geographic distribution of the family Didymozoidae in South America.

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Table 1. Original measurements (Ām) of *Coeliotrema thynni* Yamaguti, 1938 from *Thunnus albacares*, *Thunnus atlanticus*, *Thunnus obesus* and *Euthynnus alletteratus* from, Rio de Janeiro coast, Brazil.

Hosts	***T. albacares***		***T. atlanticus*** (new host record)		***T. obesus*** (new host record)		***E. alletteratus*** (new host record)	
Parasites	female	male	female	male	female	male	female	Male
Posterior region L	5 500 – 8 100 (6 240) [n=4]	560 – 1 460 (916) [n=5]	4 200 – 7 600 (5 395) [n=7]	600 – 1 700 (960) [n=7]	3 960 – 9 800 (7 010) [n=6]	550 – 2000 (1310) [n=3]	1 970 – 4 700 (3 327) [n=9]	320 – 730 (498) [n=9]
Posterior region W	3 500 – 4 300 (3 800) [n=6]	550 – 600 (576) [n=5]	2 760 – 4 700 (3 455) [n=7]	400 – 900 (550) [n=7]	2 920 – 5 300 (3 830) [n=6]	350 – 900 (590) [n=3]	1 050 – 2 740 (1 950) [n=9]	280 – 500 (353) [n=9]
Anterior region L	1 500 – 2 900 (2 160 [n=4]	2 200 – 3 300 (2 760) [n=4]	1 900 – 2 120 [n=2]	2 000 – 2 960 (2675) [n=4]	1 560 – 2 500 (2 150) [n=3]	1 500 – 3 600 (2 630) [n=3]	500 – 1 660 (800) [n=5]	650 – 1000 (780) [n=5]
Anterior region W	340 – 625 (460) [n=4]	210 – 450 (350) [n=4]	80 – 340 [n=2]	210 – 320 (262) [n=4]	300 – 360 (320) [n=3]	200 – 380 (320) [n=3]	100 – 260 (185) [n=5]	100 – 160 (131) [n=3]
Oral sucker L	77 – 110 (95) [n=4]	75 – 100 (90) [n=5]	80 – 90 (86)[n=3]	68 – 87 (76) [n=5]	65 – 95 (78) [n=3]	60 – 100 (81) [n=3]	70 – 92 (81) [n=6]	62 – 87 (73) [n=6]
Oral sucker W	63 – 95 (78) [n=4]	58 – 85 (79) [n=5]	62 – 75 (67) [n=3]	55 – 62 (60) [n=5]	60 – 77 (76) [n=3]	58 – 77 (65) [n=3]	52 – 65 (62) [n=6]	45 – 68 (54) [n=6]
Pharynx L	72 – 87 (71) [n=4]	45 – 52 (49) [n=5]	38 – 67 (49) [n=3]	32 – 50 (38) [n=5]	45 – 87 [n=2]	45 – 75 (55) [n=3]	45 – 48 [n=2]	50 [n=2]
Pharynx W	48 – 72 (59) [n=4]	38 – 50 (44) [n=5]	42 – 50 (48) [n=3]	30 – 42 (36) [n=5]	42 – 62 (n=2)	40 – 55 (47) [n=3]	40 [n=2]	42 – 45 [n=2]
Eggs L	20 (20) [n=30]	-	20 (20) [n=30]	-	20 (20) [n=30]	-	20 (20) [n=30]	-
Eggs W	10 (10) [n=30]	-	10 (10) [n=30]	-	10 (10) [n=30]	-	10 (10) [n=30]	-

L= length; W= width

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